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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/002,035	11/01/2001	Jeffrey W. Carr	CARR-01000US1	5043
23910	7590	07/23/2004	EXAMINER	
FLIESLER MEYER, LLP FOUR EMBARCADERO CENTER SUITE 400 SAN FRANCISCO, CA 94111			OLSEN, ALLAN W	
			ART UNIT	PAPER NUMBER
			1763	

DATE MAILED: 07/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/002,035	CARR, JEFFREY W.	
	Examiner	Art Unit	
	Allan Olsen	1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 April 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-15 and 18-67 is/are pending in the application.
- 4a) Of the above claim(s) 41,42,46,50,54 and 58 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-15,18-40,43-45,47-49,51-53,55-57 and 59-67 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 41,42,46,50,54 and 58 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 May 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|---|--|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input checked="" type="checkbox"/> Interview Summary (PTO-413) Paper No(s). <u>2/18/04</u> . |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____. | 6) <input type="checkbox"/> Other: _____. |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 7, 9-11, 18-20 and 22-39, 44, 45, 48, 49, 56 and 57 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 4,035,604 issued to Meleka et al. (hereinafter, Meleka).

Meleka teaches a method for finishing articles wherein the surface of the article is treated with a plasma plume such that the burrs are removed from the article's surface. As such plasma smoothes the surface or reduces the surface roughness of the article. Meleka teaches that the method is designed to prevent damaging the surface of the workpiece (column 2, lines 15-30; column 6, lines 41-46). The plasma is produced by a plasma torch that features three concentric gas supply tubes (figure 2, column 4, lines 33-52; column 4, line 59 – column 5, line 10). Meleka teaches providing a reactive gas through the central tube such that reactive species are injected into the central or core region of the plasma. Meleka teaches that the plasma torch may be operated at atmospheric pressure. Meleka teaches the plasma treatment may also be used to provide a coating to the workpiece (column 6, lines 4-12). See also: column 6, lines 37-38 and 57-59.

Claims 1, 3-11, 13, 15, 18, 22-27, 30-40, 43-45, 47-49, 51-53, 55-57 and 59-67 are rejected under 35 U.S.C. 102(a) as being anticipated by Böhm et al in DE 199 25 790 A1 (hereinafter, Böhm).

Böhm teaches a method of shaping an optic with a plasma torch. Böhm teaches placing the workpiece in a plasma processing chamber including a plasma torch; translating at least one of the workpiece and the plasma torch; and using reactive atom plasma processing to shape the surface of the workpiece with the discharge from the plasma torch (see: figure 1 and 3; Section B, Example 1). Böhm teaches that the material being shaped may be; silicon, silicon glass optics, and aspheric optics. Böhm teaches shaping the surface of the workpiece can be accomplished by removing material from the surface of the workpiece (see abstract) or by depositing material onto the surface. Böhm teaches selecting an appropriate gas to tailor process so as to achieve the desired results. Böhm teaches selectively removing one portion of a surface another masked portion is not similarly reacted. Böhm teaches rotating the workpiece with respect to the plasma torch (see abstract). Böhm teaches placing a precursor in a central channel of the plasma torch (see fig. 1). Böhm teaches etching with SF₆ and CF₄ as a plasma gas. Böhm teaches introducing a plasma gas through an outer tube of the plasma torch and introducing an auxiliary gas through a second of three concentric tubes in the plasma torch (see claims 1 and 18). Böhm teaches using an auxiliary gas to keep hot plasma away from a central channel of the plasma torch and to adjust the position of a discharge (see claim 1). Böhm teaches the processing chamber pressure may be above at or below atmospheric pressure (see 3rd paragraph under section heading "Solution Provided by Invention").

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 19-21, 28 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Böhm.

The above noted teachings of Böhm are herein relied upon.

Böhm does not teach using the reactive atom plasma to: shape and polish a surface; shape and finish a surface; remove surface roughness, remove damage introduced by previous process steps.

It would have been obvious to one skilled in the art to use the method of Böhm to polish or finish a workpiece, and to remove damage introduced by previous steps because Böhm teaches that these are among the touted utilities of plasma torch processing of workpieces. After discussing the prior art use of plasma torches and pointing out the various problems associated with prior use of plasma torches it is asserted that Böhm is able to overcome the deficiencies of the prior art. Therefore, it would be obvious that Böhm is directed to the same type of processes that had been taught by the prior art.

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Böhm as applied to claim 1 above, and further in view of Zarowin et al. in Rapid Non-Contact, Damage Free Shaping of Optical and Other Surfaces with Plasma Assisted Chemical Etching, 43rd Annual Symposium on Frequency Control 1989, 632-626 (hereinafter, Zarowin).

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Böhm does not teach using the emission spectroscopy to monitor the process.

Zarowin teaches using the emission spectroscopy to monitor a similar process.

It would have been obvious to one skilled in the art to monitor the plasma process of Böhm by emission spectroscopy because Zarowin demonstrates the utility of emission spectroscopy to monitor a process similar to that of Böhm and in so doing demonstrates that emission spectroscopy is a conventional monitoring method. Additionally, the examiner notes that the skilled artisan would know that the ICP torches have traditionally been used in analytical methods wherein the plasma species are monitored by various spectroscopic methods.

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Böhm as applied to claim 13 above and further in view of US Patent 6,068,784 issued to Collins.

Böhm does not teach using C₂F₆ as the reactive fluorine-containing etchant.

Collins teaches etching the same materials as Selwyn (for example, silicon and silicon dioxide) and Collins teaches using a gas mixture of CF₄ and Ar as well as using a mixture of C₂F₆ and Ar (column 10, lines 28-30).

It would have been obvious for one skilled in the art to use C₂F₆ in lieu of CF₄ in the method of Böhm because Collins teaches that the CF₄ and C₂F₆ are functionally equivalent as plasma etchants for silicon containing materials.

Response to Arguments

Applicant's arguments, see page 14, filed April 23, 2004, with respect to Fleming have been fully considered and are persuasive. The rejections that relied upon Fleming have been withdrawn.

Applicant's arguments filed April 23, 2004 have been fully considered but they are not persuasive with respect to Meleka. Applicant argues that Meleka does not teach using a reactive plasma. However, the examiner notes that Meleka teaches adding reactive components to the plasma and Meleka teaches choosing the specific reactive species on the basis of chemical reactivity between the reactive species and the material that is to be removed (column 6, lines 4+).

Conclusion

Applicant's amendment necessitated the new ground of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

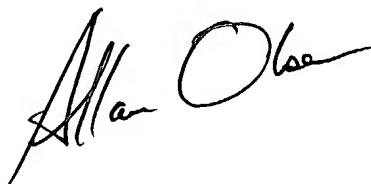
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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Allan Olsen whose telephone number is 571-272-1441. The examiner can normally be reached on M-F 1-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Greg Mills can be reached on 571-272-1439. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read "Allan Olsen", is written over a horizontal line.

Allan Olsen
Primary Examiner
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